IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method for ~~producing a preponderance of gas phase ions having higher order charge states during~~ laser desorption ionization of an analyte, the method comprising:

irradiating the analyte in the presence of energy absorbing molecules at a mid-IR wavelength**,** ~~that~~ **wherein the mid-IR wavelength** is offset from [[an]] **the** IR absorption maximum of the energy absorbing molecules**, wherein the irradiation of the analyte at the mid-IR wavelength produces analyte gas phase ions, and wherein a preponderance of the ions for at least one given mass has higher order charge states**.

2. (Original) The method of claim 1, wherein the analyte is within a matrix of said energy absorbing molecules.

3. (Currently amended) The method of claim 1, wherein the energy absorbing molecules [[are]] **comprise** photoactive components of a SEND surface upon which the analyte is disposed.

4. (Original) The method of claim 1, wherein said mid-IR wavelength is produced by a fixed wavelength laser.

5. (Original) The method of claim 1, wherein said mid-IR wavelength is produced by a tunable laser.

6. (Original) The method of claim 5, wherein the laser is a tunable optical parametric oscillator (OPO) infrared laser.

7. (Currently amended) The method of claim 1, further comprising the ~~subsequent~~ step of:

detecting at least ~~a plurality of~~ **one of** said higher order charge state gas phase ions.

8. (Original) The method of claim 7, wherein said detecting is performed using a device selected from the group consisting of: ion mobility spectrometer, total ion current measuring device, and mass spectrometer.

9. (Currently amended) The method of claim [[8]] 7, wherein said detecting **step** is performed using a mass spectrometer.

10. (Currently amended) The method of claim 9, wherein said detecting ~~further includes~~ **step comprises** a mass spectral analysis **method using the mass spectrometer**.

11. (Currently amended) The method of claim [[10]] **9**, wherein said mass spectrometer is a tandem mass spectrometer and said ~~mass spectral analysis is~~ **detecting step comprises** a tandem mass spectral analysis **method using the tandem mass spectrometer**.

12. (Original) The method of claim 11, wherein said tandem mass spectrometer is selected from the group consisting of QqTOF mass spectrometer, triple quadrupole mass spectrometer, ion trap mass spectrometer, ion trap time-of-flight (TOF) mass spectrometer, ion cyclotron resonance (ICR) mass spectrometer, time-of-flight time-of-flight (TOF-TOF) mass spectrometer, Fourier transform ion cyclotron resonance mass spectrometer, electric sector-magnetic sector mass spectrometer, magnetic sector-electric sector mass spectrometer, and electric sector-electric sector mass spectrometer.

13. (Currently amended) The method of claim [[12]] **11**, wherein said tandem mass spectrometer is a QqTOF [[MS]] **mass spectrometer**.

14. (Currently amended) The method of claim 11, wherein said tandem mass spectral analysis **method** comprises **the steps of**:

selecting at least ~~a first~~ **one of the analyte gas phase** ion**s** ~~species~~;

fragmenting ~~said~~ at least ~~first~~ **one of the selected analyte** ion**s** ~~species~~ into a plurality of product ion**s** ~~species~~; and [[then]]

performing a mass spectral analysis **method** on at least one of said product ion**s** ~~species~~.

15. (Currently amended) The method of claim 14, wherein ~~said~~ **at least one of the** selected ~~first~~ **analyte** ion**s** ~~species~~ has a mass greater than about 5000 daltons.

16. (Currently amended) The method of claim 15, wherein ~~said~~ **at least one of the** selected ~~first~~ **analyte** ion**s** ~~species~~ has a mass greater than about 10,000 daltons.

17. (Currently amended) The method of claim 16, wherein ~~said~~ **at least one of the** selected ~~first~~ **analyte** ion**s** ~~species~~ has a mass greater than about 15,000 daltons.

18. (Currently amended) The method of claim 17, wherein ~~said~~ **at least one of the** selected ~~first~~ **analyte** ion**s** ~~species~~ has a mass greater than about 25,000 daltons.

19. (Original) The method of claim 14, wherein said fragmenting is performed by collision induced dissociation.

20. (Currently amended) The method of claim 14, wherein said mass spectral analysis **method** comprises **performing** a product ion scan of **at least one of** said product ions.

21. (Original) The method of claim 1, further comprising the antecedent step of:

adsorbing said analyte from an inhomogeneous sample directly onto a SELDI probe.

22. (Original) The method of claim 21, wherein said SELDI probe is a SEND probe.

23. (Currently amended) The method of claim 21, further comprising the step~~, after adsorbing and before irradiating the analyte,~~ of:

contacting said probe-adsorbed analyte with **the** energy absorbing molecules.

24. (Currently amended) The method of claim 1, wherein said analyte [[is a]] **comprises at least one** protein.

25. (Currently amended) The method of 24, further comprising ~~a later~~ **the** step of:

determining at least a ~~partial~~ **portion of the** amino acid sequence of ~~said~~ **at least one of the** protein analyte**s based on at least one of the analyte gas phase ions**.

26. (Currently amended) The method of claim 25, wherein said ~~partial amino acid sequence is determined at least in part by~~ **determination step comprises:**

performing a product ion scan of at least one of the analyte gas phase ions; and

calculating **a plurality of** differences in masses among product ions represented in [[a]] **the** product ion scan.

27. (Currently amended) The method of claim [[26]] **25**, further comprising ~~a later~~ **the** step**s** of**:**

~~identifying said protein analyte by~~ querying a database with at least a portion of ~~said at least partial protein~~ **the amino acid** sequence **for at least one of the protein analytes**.

28. (Currently amended) The method of claim 24, further comprising ~~a later~~ **the** step**s** of ~~identifying said protein, wherein said identifying comprises~~:

performing a product ion scan of at least one of the protein analyte**s based on at least one of the analyte gas phase ions; and**

comparing [[a]] **the** product ion scan ~~of said protein analyte~~ to **at least one predicted** product ion ~~scans predicted from~~ **scan based on** protein or nucleic acid sequence databases**,** ~~; and then~~

~~using the most similar~~ **whereby similarity between the performed product ion scan and at least one of the** predicted product ion scan**s** ~~to identify~~ **identifies at least one of** said protein analyte**s**.